EXTRACTION OF RICE BRAN OIL USING AQUEOUS MEDIA

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Abstract

Rice bran oil is widely used in pharmaceutical, food and chemical industries due to its unique properties and high medicinal value. In this study extraction of rice bran oil from rice bran available in Sri Lanka, using aqueous media has been studied and key factors controlling the extraction and optimal operating conditions were identified. Several methods of bran stabilization were tested and the results were analyzed. The yield and quality of aqueous extracted oil was compared with hexane extracted oil.

Aqueous extraction experiments were conducted in laboratory scale mixer-settler unit. Steaming, hot air drying, chemical stabilization and refrigeration control the lipase activity. Steaming is the most effective stabilization technique. The extraction capacity was highest at solution pH range 10 to 12. Higher oil yield was observed at higher operating temperatures (60°C - 80°C). Kinetic studies revealed that extraction was fast with 95 % or more of the extraction occurring within first 10 to 15 min of contact time. Highest oil yield of 161 *mg!* g and 131 *mg!* g were observed for aqueous extraction for par boiled bran and raw rice bran respectively. The quality of the aqueous extracted oil was compared with that of hexane extracted oil and it was found low in free fatty acid content. Iodine value and saponification value was similar to hexane-extracted oil, but the peroxide value was higher. Furthermore, the colour of aqueous-extracted oil was paler than solvent-extracted oil.